

SEQUENCE LISTING

<110> Lal et al.

<120> Recombinant Multivalent Malarial Vaccine Against Plasmodium Falciparum

<130> 6395-57049

<140>

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<150> PCT/US99/18869

<151> 1999-08-19

<150> US 60/097,703

<151> 1998-08-21

<160> 26

<170> PatentIn Ver. 2.0

<210> 1

<211> 1053

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: recombinant
dna/protein

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<221> CDS

<222> (1)..(1053)

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tct tac atc tat gcg gat cat cat cat cat cat cat aaa cat aaa aaa	96
Ser Tyr Ile Tyr Ala Asp His His His His His His Lys His Lys Lys	
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tta aag caa cca ggg gat ggt aat cct tgg tcc cca tgt agt gta act	144
Leu Lys Gln Pro Gly Asp Gly Asn Pro Trp Ser Pro Cys Ser Val Thr	
35 40 45	
tgt gga aaa cct aaa gac gaa tta gat tat gaa aat gat att gaa aaa	192
Cys Gly Lys Pro Lys Asp Glu Leu Asp Tyr Glu Asn Asp Ile Glu Lys	
50 55 60	
aaa att tgt aaa atg gaa aaa tgt tcc agt gtg ttt aat gtc gta aat	240
Lys Ile Cys Lys Met Glu Lys Cys Ser Ser Val Phe Asn Val Val Asn	
65 70 75 80	
agt aat tct gga tgt ttc aga cat tta gat gaa aga gaa gaa tgt aaa	288
Ser Asn Ser Gly Cys Phe Arg His Leu Asp Glu Arg Glu Glu Cys Lys	
85 90 95	
tgt tta tta gaa gat tca ggt agc aac gga aag aaa atc aca tgt gaa	336

Cys	Leu	Leu	Glu	Asp	Ser	Gly	Ser	Asn	Gly	Lys	Lys	Ile	Thr	Cys	Glu		
			100					105					110				
tgt	act	aaa	cct	gat	tct	aag	cct	att	gtg	caa	tat	gac	aat	ttc	aat	384	
Cys	Thr	Lys	Pro	Asp	Ser	Lys	Pro	Ile	Val	Gln	Tyr	Asp	Asn	Phe	Asn		
		115					120					125					
gca	aac	cca	aac	gca	aac	ccc	aat	gca	aat	cct	gat	gga	aat	tgt	gaa	432	
Ala	Asn	Pro	Asn	Ala	Asn	Pro	Asn	Ala	Asn	Pro	Asp	Gly	Asn	Cys	Glu		
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gat	ata	cca	cat	gta	aat	gaa	ttt	tca	gca	att	gat	ctt	gga	aat	gct	480	
Asp	Ile	Pro	His	Val	Asn	Glu	Phe	Ser	Ala	Ile	Asp	Leu	Gly	Asn	Ala		
145					150					155					160		
gaa	aaa	tat	gat	aaa	atg	gat	gaa	cca	caa	cat	tat	ggg	aaa	tca	ctc	528	
Glu	Lys	Tyr	Asp	Lys	Met	Asp	Glu	Pro	Gln	His	Tyr	Gly	Lys	Ser	Leu		
				165					170					175			
act	cca	tta	gaa	gaa	tta	tat	aaa	cca	aat	gat	aaa	agt	ttg	tat	cag	576	
Thr	Pro	Leu	Glu	Glu	Leu	Tyr	Lys	Pro	Asn	Asp	Lys	Ser	Leu	Tyr	Gln		
			180					185					190				
tat	ata	aaa	gca	aat	tct	aaa	ttt	ata	ggg	ata	act	gaa	cta	agc	aac	624	
Tyr	Ile	Lys	Ala	Asn	Ser	Lys	Phe	Ile	Gly	Ile	Thr	Glu	Leu	Ser	Asn		
		195					200					205					
aca	ttc	ata	aac	aat	gct	gga	caa	cat	gga	cat	atg	cat	ggg	aac	gag	672	
Thr	Phe	Ile	Asn	Asn	Ala	Gly	Gln	His	Gly	His	Met	His	Gly	Asn	Glu		
	210					215					220						
agg	gaa	gat	gag	aga	acg	ctt	act	aag	gaa	tat	gaa	gat	att	gtt	ttg	720	
Arg	Glu	Asp	Glu	Arg	Thr	Leu	Thr	Lys	Glu	Tyr	Glu	Asp	Ile	Val	Leu		
225					230					235					240		
aaa	gag	ttt	aca	tat	atg	ata	aac	ttt	gga	aga	gga	cag	aat	tat	tgg	768	
Lys	Glu	Phe	Thr	Tyr	Met	Ile	Asn	Phe	Gly	Arg	Gly	Gln	Asn	Tyr	Trp		
				245					250					255			
gaa	cat	cca	tat	caa	aaa	agt	gat	caa	cct	aaa	caa	tat	gaa	caa	cat	816	
Glu	His	Pro	Tyr	Gln	Lys	Ser	Asp	Gln	Pro	Lys	Gln	Tyr	Glu	Gln	His		
			260					265					270				
tta	aca	gat	tat	gaa	aaa	att	aaa	gaa	ggg	aag	ccc	ttg	gat	aaa	ttt	864	
Leu	Thr	Asp	Tyr	Glu	Lys	Ile	Lys	Glu	Gly	Lys	Pro	Leu	Asp	Lys	Phe		
			275				280					285					
gga	aat	atc	tat	gat	tat	cac	tat	gag	cat	tct	agt	cca	tct	agt	aca	912	
Gly	Asn	Ile	Tyr	Asp	Tyr	His	Tyr	Glu	His	Ser	Ser	Pro	Ser	Ser	Thr		
	290					295					300						
aag	tca	tca	agt	cca	tca	aat	gta	aaa	tca	gct	agt	cta	gct	aca	aga	960	
Lys	Ser	Ser	Ser	Pro	Ser	Asn	Val	Lys	Ser	Ala	Ser	Leu	Ala	Thr	Arg		
305					310					315					320		
tta	atg	aaa	aaa	ttt	aaa	gct	gaa	atc	aga	gat	ttc	ttc	ggg	ata	agt	1008	
Leu	Met	Lys	Lys	Phe	Lys	Ala	Glu	Ile	Arg	Asp	Phe	Phe	Gly	Ile	Ser		
				325				330						335			
tat	tat	gaa	aag	gtt	tta	gcg	aaa	tat	aag	gat	gat	tta	gaa	tag		1053	
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Leu Lys Gln Pro Gly Asp Gly Asn Pro Trp Ser Pro Cys Ser Val Thr
 35 40 45

Cys Gly Lys Pro Lys Asp Glu Leu Asp Tyr Glu Asn Asp Ile Glu Lys
 50 55 60

Lys Ile Cys Lys Met Glu Lys Cys Ser Ser Val Phe Asn Val Val Asn
 65 70 75 80

Ser Asn Ser Gly Cys Phe Arg His Leu Asp Glu Arg Glu Glu Cys Lys
 85 90 95

Cys Leu Leu Glu Asp Ser Gly Ser Asn Gly Lys Lys Ile Thr Cys Glu
 100 105 110

Cys Thr Lys Pro Asp Ser Lys Pro Ile Val Gln Tyr Asp Asn Phe Asn
 115 120 125

Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro Asp Gly Asn Cys Glu
 130 135 140

Asp Ile Pro His Val Asn Glu Phe Ser Ala Ile Asp Leu Gly Asn Ala
 145 150 155 160

Glu Lys Tyr Asp Lys Met Asp Glu Pro Gln His Tyr Gly Lys Ser Leu
 165 170 175

Thr Pro Leu Glu Glu Leu Tyr Lys Pro Asn Asp Lys Ser Leu Tyr Gln
 180 185 190

Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu Ser Asn
 195 200 205

Thr Phe Ile Asn Asn Ala Gly Gln His Gly His Met His Gly Asn Glu
 210 215 220

Arg Glu Asp Glu Arg Thr Leu Thr Lys Glu Tyr Glu Asp Ile Val Leu
 225 230 235 240

Lys Glu Phe Thr Tyr Met Ile Asn Phe Gly Arg Gly Gln Asn Tyr Trp
 245 250 255

Glu His Pro Tyr Gln Lys Ser Asp Gln Pro Lys Gln Tyr Glu Gln His
 260 265 270

Leu Thr Asp Tyr Glu Lys Ile Lys Glu Gly Lys Pro Leu Asp Lys Phe

275		280		285
Gly Asn Ile Tyr Asp Tyr His Tyr Glu His Ser Ser Pro Ser Ser Thr				
290		295		300
Lys Ser Ser Ser Pro Ser Asn Val Lys Ser Ala Ser Leu Ala Thr Arg				
305		310		315
Leu Met Lys Lys Phe Lys Ala Glu Ile Arg Asp Phe Phe Gly Ile Ser				
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Tyr Tyr Glu Lys Val Leu Ala Lys Tyr Lys Asp Asp Leu Glu				
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Leu Leu

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Lys Ser

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Val Leu Lys

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Phe

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<210> 25
<211> 22
<212> PRT
<213> Honey bee

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Ser Tyr Ile Tyr Ala Asp
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<223> Description of Artificial Sequence: synthetic

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